Lindbeck, Assar; Snower, Dennis J.

Working Paper — Digitized Version
Demand- and supply-side policies and unemployment: policy implications of the insider-outsider approach

Seminar paper, Institute for International Economic Studies, University of Stockholm, No. 439

Provided in Cooperation with:
Kiel Institute for the World Economy (IfW)


This Version is available at:
http://hdl.handle.net/10419/532

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes.
You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.
If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
DEMAND- AND SUPPLY-SIDE POLICIES AND UNEMPLOYMENT:
POLICY IMPLICATIONS OF THE INSIDER-OUTSIDER APPROACH

by

Assar Lindbeck and Dennis J. Snower

Seminar Papers are preliminary material circulated to
stimulate discussion and critical comment.

April, 1989

Institute for International Economic Studies
S-106 91 Stockholm
Sweden
DEMAND- AND SUPPLY-SIDE POLICIES AND UNEMPLOYMENT:
Policy Implications of the Insider-Outsider Approach

Assar Lindbeck and Dennis J. Snower

1. Introduction

This paper examines what a government can do to stimulate employment in an economy where unemployment arises out of a conflict of interest between insiders and outsiders. We extend the basic insider-outsider analysis by (I) assuming that wages are the outcome of bargaining between firms and their insiders (rather than being set unilaterally by the insiders) and (II) concentrating on the policy implications of insider activity in the labor market. We are particularly concerned with identifying channels whereby macroeconomic policies can influence employment and unemployment and assessing the effectiveness of demand- and supply-side policies in this regard.

The paper may also be seen as a link in a chain of research projects exploring the implications of labor turnover costs and insider market power for labor market activity. In a static context, some of our previous work (e.g. Lindbeck and Snower (1984), (1987a) and (1989a)) examines (a) how labor turnover costs¹ affect firms' employment decisions (at predetermined wages), (b) how these costs generate market power for the insiders, and (c) how insider market power affects wages and employment. In a dynamic context, Blanchard and Summers (1986), Gottfries and Horn (1986), and others investigate the effect of insider power on employment (effect (c) above) presupposing that insiders have market power; whereas Bentolilla and Bertola (1988) and (informally) Lindbeck and Snower (1989a, ch.11, sec.1,2) examine the effect of labor turnover costs on employment (effect (a) above) in the absence of insider power. This paper

¹The turnover costs are assumed to be finitely large even for very small rates of labor turnover, so as to create a discontinuity in firms' labor demand functions.
explores the effectiveness of government policies when all three effects above are at work simultaneously in a static setting.

"Insiders" are taken to be experienced Incumbent employees whose positions are protected by labor turnover costs. "Outsiders" are workers who have no such protection - they are either unemployed or hold jobs with little job security in the informal sector of the economy. We focus attention on the "formal sector", where employment is covered by job security legislation and where incumbent employees have the opportunity to exploit labor turnover costs by engaging in rent-creating activities. Both the job security legislation and the rent-creating activities generate labor turnover costs that fall on the firms, i.e. they make it costly for the firms to fire the incumbent employees and hire other workers in their place. In this setting incumbent workers are able to attain insiders status.

As the insider-outsider theory suggests, these labor turnover costs give the insiders market power, which they may use to pursue their own interests in wage negotiations. For simplicity, we assume that the insiders do not take the interests of the outsiders into account (but our qualitative conclusions could also be derived from the less extreme assumption that the insiders take their own interests more into account than those of the outsiders in the wage bargaining process). Since the outsiders have little (if any) market power themselves, they are "disenfranchized" in the wage determination process - although (as we shall see below) they do exert an indirect influence on this process.

The ways in which the activities of insiders may generate involuntary unemployment has been investigated in detail elsewhere (e.g. Lindbeck and Snower (1984, 1988, 1989a)). Suffice it here to say that the insiders use their market power in the course of the wage negotiations to drive their wages above the minimum level at which outsiders would be prepared to work. Yet, on account of the labor turnover costs, the firm has no incentives to replace the insiders by outsiders. The outsiders may remain involuntarily unemployed in the sense that their inability to find a job is due to the circumstance that they face less favorable employment opportunities than the insiders.

In this context, we will examine the effectiveness of demand- and supply-side policies in stimulating employment. The demand-side policies which we consider are the traditional Keynesian fiscal
Instruments say, government expenditures in the product and labor markets, taxes, and transfer payments. The supply-side policies include a wide variety of measures designed to make workers more profitable and to create greater equality of opportunity in the labor market: reductions in payroll taxes, reductions in legislated severance payments, government investment in industrial infrastructure, legislation to reduce union power, retraining schemes, reduction of barriers to entry of new firms, measures to open the economy to foreign competition, and tax incentives for profit-sharing.

Our model of the labor market assumes that nominal wages are the outcome of negotiations between each firm and its insiders, while the employment and pricing decisions are made by the firms. These decisions are assumed to be made in sequence: first the nominal wage is set, given perfect information about the firms' responses; then employees decide whether to remain at their jobs or quit them; and finally the firms simultaneously set product prices and decide how many insiders and "entrants" (new recruits) to hire, taking the nominal wage and quits as given. To keep our analysis particularly simple, we consider a static model (in which workers and firms make their decisions over a one-period time horizon), and thus the policy implications which we derive are static as well. (Dynamic policy implications are considered in Lindbeck and Snower (1989b).)

The reason for including quits in our model is to show that, contrary to some highly simplified insider-outsider models, the existence of quits need not lead to the progressive decline of firms' insider work forces with the passage of time. It has been argued that if the insiders of a firm set their wages, taking account only of the employment opportunities of the firm's current incumbent work force, and if this incumbent work force shrinks through time due to quits, then the number of insiders will fall towards zero through
time. In our model, this does not happen for two reasons: 

(I) Insiders do not set their wages unilaterally, but rather participate in wage negotiations with firms, which exert downward pressure on wages. (II) The wage negotiations predate the quit decisions and do not take these decisions into account.

The paper is organized as follows. Section 2 specifies the firms' decision-making problem, and Section 3 describes the wage-setting process. Section 4 incorporates this microeconomic behavior in an aggregative analysis of the labor market. In this context, Sections 5 and 6 examine the effectiveness of supply- and demand-side policies with respect to wages, employment, and unemployment. Finally, Section 7 contains our concluding remarks.

2. Employment and Pricing Decisions

Our model of the firms' employment and pricing decisions is quite conventional. It presupposes that, after the nominal wage bargain has been struck, each firm takes this wage as given in making its employment, production and pricing decisions.

We assume that there is a fixed number (M) of identical firms in the economy, all producing a homogeneous product. The aggregate

2Of course other reasons are conceivable as well. Insider may have an incentive to set wages sufficiently low to permit the entry of new employees when there are increasing returns to labor, when insiders and entrants are engaged in complementary production activities, or when insiders cannot predict the precise position of the labor demand curve when wages are set. (Blanchard and Summers (1986) and Lindbeck and Snower (1987a) deal with the last of these possibilities.) Furthermore, Lindbeck and Snower (1984, 1987a, 1988) show that the insiders' wage cannot rise above the sum of the entrants' wage and the relevant labor turnover costs, for otherwise the firm would have an incentive to replace insiders by entrants.

3For example, the insiders' objective in the wage negotiations may be to set their wages as high as possible subject to the constraint that the entire incumbent work force is retained. Yet after the negotiations have taken place, some insiders may quit for reasons (e.g. illness or other personal circumstances) that are unrelated to their current wages and that could not have been predicted when wages were set. The firm then wants to replace workers who quit.

4The assumption of homogeneous products is made only for expositional simplicity. It is straightforward to extend our analysis to the case of differentiated products.
product demand function may be expressed as

\[ P = P(Q, A), \quad P_Q < 0, P_A > 0, \]

where \( P \) is the price of the product, \( Q \) is the aggregate product demand, and \( A \) is a shift parameter of the product demand function. Demand-side policies are assumed to change the parameter \( A \).

Each firm's employment \((n)\) comprises \( n_1 \) insiders and \( n_E \) entrants:

\[ n = n_1 + n_E. \]

Let \( m \) be the stock of insiders which the firm has inherited from the previous time period. This stock is historically given. It depends on last period's stock of insiders \((m_{-1})\), the quit rate \((q)\), and the proportion of last period's entrants who become insiders in the current period \((\delta)\):

\[ m = (1-q) \cdot m_{-1} + \delta \cdot (1-q) \cdot [n_{-1} - m_{-1}]. \]

Entrants are assumed to turn into insiders after one period of employment. Thus, the firm's insider employment cannot exceed its current insider stock: \( n_1 \leq m \). Assuming - for simplicity - that insiders and entrants are equally productive, we let the firm have the following production function:

\[ \text{Cobb-Douglas form of the production function merely permits us, in the analysis that follows, to derive a particularly simple aggregate labor demand relation (equation (16)) and wage setting function (equation (14)). Our qualitative results would still hold if we made the more general assumption that } q = f(n), \text{ were } f' > 0 \text{ and } f'' < 0. \]

\[ \text{By contrast, the product demand function (1) is given in terms of a more general functional form, in order to enable us to inquire (in Section 8), under what general conditions it is possible for demand management policies to affect labor market activity.} \]

\[ \text{5The first right-hand term stands for the number of last period's insiders who have not quit. The second refers to either (a) the number of last period's entrants who have not quite (if } n_{-1} > m_{-1} \text{) or (b) the number of insiders who were fired in the last period and who would not have quite (if } n_{-1} < m_{-1} \text{). For simplicity, we assume that } \delta \text{ and } q \text{ are constants.} \]

\[ \text{6This is not an assumption of substance. Our conclusions would also hold if we assumed insiders to be more productive than entrants, say, in a production function } q = B \cdot (\xi \cdot n_1 + n_E) \text{ where } \xi \text{ is a positive constant greater than unity.} \]

\[ \text{7Cobb-Douglas form of the production function merely permits us, in the analysis that follows, to derive a particularly simple aggregate labor demand relation (equation (16)) and wage setting function (equation (14)). Our qualitative results would still hold if we made the more general assumption that } q = f(n), \text{ were } f' > 0 \text{ and } f'' < 0. \]

\[ \text{By contrast, the product demand function (1) is given in terms of a more general functional form, in order to enable us to inquire (in Section 8), under what general conditions it is possible for demand management policies to affect labor market activity.} \]
where \( q \) is the quantity of output produced by the firm, and \( B \) and \( \alpha \) are constants.

Since each firm is an imperfect competitor in the product market, its behavior depends on how it expects its rivals to respond to its decisions. We summarize these expectations by the conjecture function:

\[
Q = b + v \cdot q,
\]

where \( b \) and \( v \) are constants, and \( v \) specifies the expected response of aggregate output to a change in the firm's output. (In other words, when the firm changes its output by \( \Delta q \), it expects its rivals to increase their output by \((v-1) \cdot \Delta q\).) This conjecture function allows us to consider the following special cases from the literature on bargaining games:

- cartel behavior: \( v = M \), so that the firms behave like joint profit maximizers,
- Cournot behavior: \( v = 1 \), and
- Bertrand behavior: \( v = 0 \), so that the firms behave like perfect competitors.

Turning to the firm's labor costs, we divide these into three categories: (I) wages and payroll taxes, (II) legislated labor turnover costs, and (III) costs of insiders' rent-creating activities.

With regard to the first category, we assume that all workers within a firm receive the same nominal wage (\( W \)). This is not an assumption of substance; our only reason for making it is that it provides a simple channel whereby insider-induced wage increases lead to reductions in employment.\(^8\) As noted, the firm takes the nominal wage to be exogenously given when it makes its pricing and employment decisions. It also faces an exogenous payroll tax of \( \tau \).

The second and third categories of labor costs also have a role to play in our model of wage negotiations. We portray these negotiations

---

\(^8\)To appreciate the significance of this assumption, suppose instead that the new entrants to the firm receive a wage which is independent of the insider wage. In that case, the firm's overall level of employment is such as to equate the entrants' marginal revenue product with their wage, and consequently this employment level cannot be affected by changes in the insider wage.
In terms of a generalized Nash bargain between the firm and its insiders. In this context it turns out that the negotiated wage depends on the difference between the profit earned under agreement and disagreement in the negotiations, which will be called the "firm's surplus". For this reason, the insiders have an incentive to engage in rent-creating activities when there is disagreement, but not when there is agreement. Consequently, the costs of these activities arise only under disagreement as well.

These costs come in many guises. For instance, when there is a breakdown in wage negotiations, the insiders may work-to-rule, be less cooperative under team production, engage in litigation, or go on strike. For simplicity, this paper does not consider the employment effects of government policies operating via the influence of these policies on insiders' rent-seeking activities under disagreement. Accordingly, we make the assumption that when the insiders engage in these activities, the firm earns a constant fraction \(1-\chi\) (where \(0 \leq \chi < 1\)), of its profit under agreement. The parameter \(\chi\) may be understood as a measure of the magnitude of insiders' rent-creating activities under negotiation disagreement. In other words, if its profit under agreement is \(\pi^*\), then its profit under disagreement is \((1-\chi)\cdot \pi^*\).

Under agreement the firm is assumed to bear only the legislated labor turnover costs. For brevity, we focus attention on one such cost: a firing cost, which may take the form of, say, legally mandated severance pay or the firm's expected cost of implementing agreed firing procedures. Let \(F\) be the magnitude of the firing cost per insider fired. We assume that the real marginal firing cost, \(f=F/P\) is a constant. The firm's total cost of firing is \(F\cdot (m - n)\), where \(F=F\) for \(m \leq n\), and \(F=0\) for \(n > m\).

Now consider the firm's decision-making problem under agreement.

---

9For a discussion of these activities in the context of the insider-outsider theory, see Lindbeck and Snower (1984a, 1988a.)

10This is an assumption of substance. In general we would expect that one channel whereby demand- and supply-side policies may affect wages and employment is by influencing the magnitude of insiders' rent-creating activities. However, our assumption that \(\chi\) is a constant implies that its value does not affect the outcome of the Nash bargain over the nominal wage.
In the wage negotiations:

\[(6) \text{Maximize } \pi = P \cdot q - W \cdot (1+\tau) \cdot n - F \cdot (m - n_1) \]

subject to \[P = P(Q, A)\]
\[Q = b + v \cdot q\]
\[q = B \cdot n^\alpha\]
\[n = n_1 + n_E\]
\[n \leq m,\]
where the firm's decision variables are \(q, P, n, n_1,\) and \(n_E.\)

The solution to this problem\(^\text{11}\) may be expressed as a relation between the firm's total labor demand and the real wage, which we call the "labor demand relation", pictured in Figure 1. The three segments of this relation correspond to the following scenarios:

- The "Hiring Scenario":

Here the nominal wage is low enough to induce the firm to set its employment level above its initial insider workforce. Thus, some entrants are hired and no insiders are fired.\(^\text{12}\) Consequently firing costs do not arise. The firm sets its total employment so that the marginal value product of labor is equal to the nominal labor costs:

\[(7) \alpha \cdot B \cdot (1-e) \cdot P \cdot (n^D)^{\alpha-1} = W \cdot (1+\tau), \quad \text{for } n^D > m,\]

where \(n^D\) is the firm's profit-maximizing level of employment. The parameter \(e\) is Lerner's Index of monopoly power (i.e., the price-cost

\(^{11}\)For an algebraic solution to an analytically similar problem, see Lindbeck and Snower (1987b).

\(^{12}\)On account of the firing cost, the firm never has an incentive to fire an insiders when it hires entrants.
Figure 1: The Firm’s Labor Demand Relation.
(8) \( e = \frac{\eta M}{\eta M} \),

and \( \eta \) is the price elasticity of aggregate demand:

\[
\eta = -\frac{dQ/dP}{P/Q}.
\]

Condition (7) obviously implies the following labor demand relation in the Hiring Scenario:

\[
(9) \quad n^D = \left[ \frac{W \cdot (1+\tau)}{P \cdot \alpha \cdot (1-e) \cdot B} \right]^{-1/(1-\alpha)}, \quad \text{for } n^D > m.
\]

Since the Hiring Scenario occurs only when \( n^D > m \), it is clear (from equations (4), (5), and (9)) that the nominal wage must then be less than the following critical level:

\[(9a) \quad W < K_1,\]

where the constant \( K_1 \) is given by

\[
(9b) \quad K_1 = \left[ \frac{1}{1+\tau} \right] \cdot m^{-1} \cdot P \cdot (b + v \cdot B \cdot m^\alpha) \cdot A \cdot \alpha \cdot (1-e) \cdot B.
\]

The "Firing Scenario":

Here the nominal wage is high enough to induce the firm to set its employment level beneath its initial insider workforce. Thus, no entrants are hired and some insiders are fired, at a firing cost of \( F \) per insider. By implication, total employment is set so that the nominal wage is equal to the sum of the marginal value product of labor and the marginal firing cost:

\[
(10) \quad \alpha \cdot B \cdot (1-e) \cdot P \cdot (n^D)_{\alpha-1} + F = W \cdot (1+\tau), \quad \text{for } n^D < m.
\]

This condition implies the following labor demand relation:

---

13 By the first order condition (7), the firm's marginal cost of production is

\[
C = \frac{W}{\alpha \cdot B \cdot n^{\alpha-1}} = P \cdot (1-e).
\]

Thus, the price-cost margin, \( (P-C)/P \), is \( e \).

14 Note that equation (8) is not a labor demand curve in the perfectly competitive sense, since both \( n \) and \( P \) are endogenous to the firm.
By equations (4), (5) and (11), we can see that the Firing Scenario occurs whenever nominal wage is greater than a critical level:

\[ W > K_2, \]

where the constant \( K_2 \) is given by

\[ K_2 = \left[ \frac{1}{1+T} \right] \cdot m^{-(1-a)} \cdot P[(b + v \cdot B \cdot m^a), A] \cdot \alpha \cdot (1-e) \cdot B + \left[ F/(1+T) \right]. \]

- The "Retention Scenario":

   Here the nominal wage is such as to induce the firm to retain its initial insider workforce, but to hire no entrants.

\[ n^D = m. \]

By (9) and (11), it is clear that this happens whenever the nominal wage falls into the following range:

\[ K_1 < W < K_2. \]

In sum, Equations (9), (11), and (12) will serve as our description of the firm's employment and pricing decisions. We now turn to the wage-setting process, where these decisions are taken into account.

3. Wage Determination

As noted, the nominal wage (of both Insiders and entrants) is taken to be the outcome of a generalized Nash bargain between each firm and its Insiders:

\[ \text{Maximize } \omega \cdot \phi^{1-a}, \quad \text{subject to } W \]

where \( \omega \) is the Insiders' objective in the negotiations, \( \phi \) is the firm's objective, and "a" is a constant \( 0 < a < 1 \) that represents the bargaining strength of the Insiders relative to that of the firm.

a. The Firm's Objective

We let the firm's objective be the maximization of the "firm
surplus", which is the difference between the profit earned under agreement \((\pi)\) and the threat-point profit \((\pi_o)\), which we have specified as \((1-\chi)\cdot\pi\). In short,

\[(14) \phi = \pi - \pi_o = \chi \cdot \pi.\]

b. The Insiders' Objective

The insiders seek to maximize the "insider surplus", which is the difference between the real wage income that the insiders receive under agreement and their threat-point income.

The real wage relevant to the insiders is the consumption wage: \((W/P_a)\), where \(P_a\) is the consumer price index. We assume that each individual firm exerts a negligible influence on the consumer price index, and thus \(P_a\) is exogenous to the insiders' decision making. The insiders' real "threat-point wage" is denoted by \(w_o\). For simplicity, we take \(w_o\) to be a constant, that depends on all the various determinants of the insiders' incomes in the case of disagreement in the wage negotiations: the magnitude of strike fund payments, the level of support forthcoming from family and friends during the dispute, the opportunity of finding temporary, informal work during the dispute, the reservation wage, and so on.

Note that unless the insiders are all dismissed in case of disagreement, the insiders' threat-point wage \((w_o)\) is not necessarily equal to their reservation wage \((w_r)\). In fact the threat-point wage must be greater than or equal to the reservation wage: \(w_o \geq w_r\), for otherwise the insiders would quit the firm.

For simplicity, we will assume that the workers' bargaining objective is to maximize the surplus of those insiders involved in the wage negotiation process. Recall that the insiders are assumed to make their quit decisions only after the wage has been set (but before the employment decisions are made). Thus the total number of insiders employed by the firm when the wage negotiations take place is

\[\mu = m + q \cdot (1-\delta) \cdot m_{-1} + 6 \cdot q \cdot n_{-1},\]

by Equation (3). We assume that a proportion \(\lambda (0 < \lambda \leq 1)\) of these insiders are actually involved in the wage negotiation process. Furthermore, we assume that these insiders seek the highest possible wage subject to the constraint that they are retained. In short, the workers' bargaining objective is to maximize the surplus of \(\lambda \cdot \mu\)
Insiders subject to

\[(15) \; \eta \geq \lambda \cdot \mu.\]

What proportion \(\lambda\) of insiders are engaged in the bargaining process depends (among other things) on the degree of collusion among insiders and the structure of collusive decision making. For example:

- Suppose that all insiders bargain "individually" with their firm, i.e. each insider takes the wage and employment of all other insiders as given when bargaining over his wage. Consequently, each insider sees himself as the marginal incumbent in the wage negotiations. Provided that the negotiated wage gives the insider a greater income than he would have enjoyed in the absence of his current job, he has an incentive to ensure that his wage is not set high enough to lead to his dismissal. In that event, \(\lambda = 1\).

- Suppose that the wage bargaining is conducted by the firm and a firm-specific union. We assume that each union member's preferences are characterized by a lexicographic ordering over employment and wages, i.e. the member's first priority is to ensure that he is retained and - subject to this constraint - to achieve the maximal wage income. Furthermore, suppose that the union's decisions are formulated through majority voting, so that the union may be said to represent the median voter. In that event, \(\lambda = (1/2)\). (Of course, in a repeated game with time discounting, \(\lambda\) may exceed \((1/2)\), since the current median voter realizes that once incumbents are dismissed, he loses his median voter status and a new wage may then be set which will induce the firm to dismiss him.)

- Suppose that the decisions of the union above are made by a \(z\%\) majority rule (in a one-shot game), then \(\lambda = 100 \cdot z\).

We assume that the firm has a seniority system, viz, an ordering whereby its fires its employees. Consequently, there are \(\lambda \cdot \mu\) identifiable insiders who occupy a privileged position in the wage negotiations, in that they have the assurance that the wage will be set so that they will be retained.

We will focus our attention exclusively on the non-trivial solution to the wage bargaining problem in which the constraint \((15)\) is not binding.\(^{15}\) Thus the \(\lambda \cdot \mu\) "privileged" insiders have nothing to lose from a wage increase: it does not reduce their employment, but merely discourages the firm from employing as many other workers as it would otherwise do. Therefore, their negotiation

\(^{15}\)When the constraint is binding, the wage will simply be set so that exactly \(\lambda \cdot \mu\) insiders are employed. In that case, government policies in the labor market can have no effect on the level of employment.
objective is simply to maximize the following expression:

\[
\omega = (W - w_o \cdot P_a).
\]

c. Wage Determination

The first-order condition for an interior solution to the Nash bargaining problem (13) is

\[
[(\partial \omega / \partial W) \cdot (W^* / \omega)] = - [(1-a)/a] \cdot [(\partial \phi / \partial W) \cdot (W^*/\phi)],
\]

where \( W^* \) is the nominal wage that emerges from the negotiation process. This condition simply states that the relative elasticities of the insiders' and firm's objectives with respect to the wage must be equal to their relative bargaining strengths. Substituting the firm's objective (14) and the workers' objective (16) into (17), we obtain

\[
(17a) \quad (1+\tau) \cdot [(W^*/P) - w_o \cdot (P_a/P)] = [a/(1-a)] \cdot \left[ \frac{(\pi/P)}{n} \right],
\]

which states that the difference between real labor remuneration (net of payroll taxes) under agreement and disagreement is proportional to the real profit per employee (with the factor of proportionality being the ratio of the bargaining strengths).

We may now derive the microeconomic "wage setting function", which describes the negotiated wage at any given level of employment by the firm. In the Hiring and Retention Scenarios, the firm's real profit is \( (\pi/P)/n = B \cdot n^{\alpha - 1} - (W/P) \cdot (1+\tau) \cdot n \), and thus real profit per employee is

\[
(17b) \quad (\pi/P)/n = B \cdot n^{\alpha - 1} - (W/P) \cdot (1+\tau).
\]

Substituting equation (17b) into (17a), we obtain the following expression for the real product wage that is the outcome of the firm's price setting and the nominal wage negotiations between the firm and its insiders under the Hiring and Retention Scenarios:

\[
(18a) \quad (W^*/P) = a \cdot \left[ B/(1+\tau) \right] \cdot n^{-(1-\alpha)} + (1-a) \cdot w_o \cdot (P_a/P).
\]

Analogously, in the Firing Scenario the firm's real profit per employee is

\[
(17c) \quad (\pi/P)/n = B \cdot n^{\alpha - 1} - [(W/P) \cdot (1+\tau) + (F \cdot (m-n))/n].
\]

If we now substitute (17c) into (17a), we find the following
expression for the real product wage:

\[(18b) \quad \frac{W^*}{P} = a \cdot \left[ \frac{1}{1 + T} \right] \cdot \frac{B \cdot n^{-1 - \alpha}}{(F \cdot (m-n))/n} + (1-a) \cdot w_o \cdot \left( \frac{P}{P_a} \right).\]

Observe that, in all three scenarios, the above real product wage (for any given level of employment by the firm) is greater, the larger the insiders' bargaining strength (a), the real threat-point wage \(w_o\), the productivity coefficient B, and the payroll tax rate (\(T\)). In addition, for the Firing Scenario, the above real wage is positively related to the magnitude of the firing cost per worker. Equations (18a) and (18b) comprise the microeconomic wage setting function.

Our model of real wage and employment determination at the microeconomic level of the firm is given by equations (9)-(12a) and (17a)-(18b). We now proceed to incorporate this analysis into a simple model of the aggregate labor market.

4. The Aggregate Labor Market

Recalling that there are a fixed number (M) of identical firms in the economy, the reduced form relation between aggregate labor demand \(N^D\) and the real wage \(W/P\) — which we call the "aggregate labor demand relation" — is

\[(19a) \quad N^D = M \cdot \left[ \frac{W \cdot (1+\tau)}{P \cdot \alpha \cdot e \cdot B} \right]^{-1/(1-\alpha)} \text{ in the Hiring Scenario,}\]

\[(19b) \quad N^D = M \cdot m \text{ in the Retention Scenario, and}\]

\[(19c) \quad N^D = M \cdot \left[ \frac{W \cdot (1+\tau) + F}{P \cdot \alpha \cdot e \cdot B} \right]^{-1/(1-\alpha)} \text{ in the Firing Scenario.}\]

(by equations (9), (11), and (12)). This aggregate labor demand relation is repeated in Figures 2.
The labor supply function is assumed to be upward-sloping, i.e. the reservation wage \( w_r \) is positively related to the level of employment. This supply curve is denoted by \( N^S \) in Figures 2.

Now turn to the wage setting function for the aggregate labor market. For simplicity, suppose that each firm hires a representative sample of the labor force, so that all firms face the same exogenous real threat-point labor remuneration, \( w_o \). We assume that \( w_o \) is positively related to the employment rate: \(^{17}\)

\[
w_o = w_o(N), \quad w_o' > 0.
\]

This assumption seems plausible: The greater the employment rate, the greater the probability of finding a new job (and thus the greater the reservation wage), the greater the insiders' chances of finding temporary employment or receiving support from family and friends during a breakdown in wage negotiations, and thus the greater the threat-point remuneration \( w_o \).

The relation between the threat-point wage and the aggregate level of employment illustrates how labor market conditions external to the firm may influence the wage setting process when insiders have market power. In short, our description of the labor market is based on an "insider-outsider" model, not merely an "insider" model.

Figures 2a and 2b depict the Hiring and Retention Scenarios (respectively). Here, the aggregate wage setting function (represented by the WS curve in the figures) is

\[
(W^*/P) = a \cdot \left[ B/(1+\tau) \right] \cdot [N/M]^{-(1-\alpha)} + (1-a) \cdot w_o(N) \cdot (P/\bar{P}),
\]

\(^{16}\) This assumption is not one of substance. Our analysis of unemployment is equally compatible with a downward-sloping aggregate labor supply curve. What is crucial to our policy results, in terms of Figures 2, is that employment be determined by the intersection of the wage setting curve and the aggregate labor demand relation. This is the case whenever the above intersection occurs to the left of the full-employment point (given by the intersection between the aggregate labor demand relation and the aggregate labor supply curve, so that there is unemployment. \(^{17}\)

The upward slope of the wage setting function is not essential to our analysis. Our policy results could be derived under a flat wage setting function as well.
(by equations (18a) and (20)), and recalling that n·M = N. In the Hiring Scenario, this function crosses the bottom segment of the aggregate labor demand relation (19a), so that the equilibrium real wage is $w_H^*$ and equilibrium employment level is $N_H^*$. The equilibrium level of unemployment $^{18}$ ($u_H^*$) is the difference between the aggregate labor force ($s$) and the equilibrium employment level:

$$u_H^* = s - N_H^*.$$

In the Retention Scenario (portrayed in Figure 2b), the aggregate wage setting function crosses the vertical segment of the aggregate labor demand curve. The equilibrium real wage, employment, and unemployment levels are denoted by $w_R^*$, $N_R^*$, and $u_R^*$, respectively.

Finally, in the Firing Scenario the aggregate wage setting function is

$$\left(\frac{w^*}{P}\right) = a \cdot \frac{1}{1+\tau} \cdot \left(\frac{B \cdot (N/M)^{(1-a)}}{(m\cdot N/M) - 1}\right)$$

by Equation (18b) and (20). In Figure 2c the WS curve crosses the top segment of the aggregate labor demand relation ($N^d$). The equilibrium levels of the real wage, employment, and unemployment are denoted by $w_F^*$, $N_F^*$, and $u_F^*$, respectively.

By the second-order conditions for an interior optimum of the Nash bargain over the wage, $\left[\frac{d(w/P)}{dN}\right]_{WS} > \left[\frac{d(w/P)}{dN}\right]_{N}$, i.e. the slope of the wage setting function must be greater than the corresponding slope of the aggregate labor demand function. In fact, for the policy analysis which follows, we will assume that the wage setting function is upward-sloping.

By equations (18)-(21), it is easy to show how the level of unemployment depends on the insiders' bargaining power (given by the parameter "a"). The lower their bargaining power, the lower the wage setting function (by (18) and (19)) and consequently the greater the

---

$^{18}$ Provided that the equilibrium real wage, $w_H^*$, exceeds the reservation wage, $R$, as illustrated in Figures 2 - this unemployment is involuntary in the sense that the unemployed workers are without jobs even though they would be willing to work for less than the negotiated wage.
equilibrium level of employment.\textsuperscript{19}

In the context of this aggregate labor market, we now inquire how government policies can affect labor market activity.

5. Supply-side Policies

It is convenient to group the supply-side policies under the following three headings:

I. policies designed to make all workers - insiders, entrants, and outsiders alike - more profitable to the firms, to be called "employment-promoting policies",

II. policies which reduce the insiders' market power, which we call "power-reducing policies", and

III. policies designed to enfranchise outsiders in the process of wage negotiations, to be called "enfranchising policies".

Although these policies may ultimately have similar influence on some labor activities,\textsuperscript{20} their proximate effects are different. The immediate impact of the employment promoting policies is to raise the productivity or reduce the labor costs associated with all workers. (In doing so, outsiders may become "enfranchised", but that is only a by-product of these policies.) The power-reducing policies' proximate effect is to give the insiders less economic rent to exploit - though indirectly the employment of outsiders may indeed be stimulated. The immediate impact of the enfranchising policies is to make outsiders more profitable to the firms and thereby give more workers insider status. (In the process, the market power of the previous incumbents may - but need not - fall.)

Before describing the effects of each of these policies on employment and the real wage, a few general - and obvious - remarks about policy effectiveness will help set the scene. First, as noted, the analysis above indicates that whenever a firm faces labor turnover costs even under agreement in the wage bargain (e.g. the firing cost in our model), then its labor demand relation will contain a vertical

\textsuperscript{19}In the extreme case where insiders have no bargaining power at all (a=0), the negotiated real product wage is equal to the real threat-point wage: \((W*/P) = w_0(P_*/P)\).

\textsuperscript{20}For example, they are all capable of stimulating employment, and policies (II) and (III) both diminish the inequality of market power between insiders and outsiders.
segment. The position of this vertical segment depends solely on the magnitude of the firm's insider workforce, which is historically given and cannot be influenced by current policy measures. By implication, employment is not responsive to policy within a particular wage corridor (whose size is equal to the magnitude of the above labor turnover costs). It is only possible for policy measures to be effective outside this corridor. By implication, the ability of these measures to stimulate employment in an economy with heterogeneous firms must depend on the number of firms operating under the Retention Scenario relative to the number operating under the Hiring and Firing Scenarios.

Second, since a firm faces a different set of costs when it hires entrants than when it fires insiders, it may be expected to respond differently to economic policies under the Hiring and Firing Scenarios. This difference arises not only because the firm's labor demand relation is different under these two scenarios, but also because the firm—being a party to the wage negotiations—exerts a different influence on wage determination when it is hiring than when it is firing.

Third, it is important to emphasize that the distinctive "insider-outsider" features of our analysis are incorporated mainly in the wage setting function. Clearly, the labor supply function is not affected by the exercise of Insider power. The labor demand relation differs from the conventional one under Imperfect competition in that it explicitly takes into account the labor turnover costs facing the firm (here the marginal revenue product of labor net of turnover costs under wage agreement is set equal to the nominal wage). However, it is the wage setting function that represents the exercise of Insider power in wage bargaining. In the absence of such power, the wage setting function would coincide with the labor supply function, and thus the real wage would fall to its market-clearing level (at the intersection of the labor supply function $N^S$ and the aggregate labor demand relation $N^D$ in Figures 2), and unemployment would disappear.

Thus, to gain an intuitive understanding of how the exercise of Insider power influences the effectiveness of government policies, it is useful to compare our policy results with the corresponding ones under market-clearing conditions (in the presence of labor turnover costs and Imperfect competition in the product market, as given by the intersection of the labor demand relation and the labor supply curve).
Since the salient features of our wage bargaining model are embodied in the position rather than the slope of the wage setting function, it is desirable to abstract from the way in which this slope influences the impact of government policies. We do so by considering only marginal policy changes and assuming that the slope of the labor supply curve at the market-clearing point is equal to the slope of the wage setting function at the insider-outsider equilibrium. In this context, policies which merely shift the aggregate labor demand relation have the same qualitative effects on the real wage and employment in both the Insider-outsider and the market-clearing frameworks. By contrast, policies which shift the wage setting function but not the labor supply curve have different qualitative effects in the two frameworks. Here the distinctive Insider-outsider features of our analysis have a special role to play in determining the effectiveness of economic policy.

Finally, as we have seen in the previous section, the aggregate wage-setting curve may be upward- or downward-sloping, but its slope is always of greater magnitude than that of the aggregate labor demand curve; whereas the slope of the aggregate labor demand curve is unambiguously negative. Thus policies whose influence is attributable to the distinctive Insider-outsider features of our analysis - in the sense that they lead to a shift of the aggregate wage setting function - invariably move the real wage and employment in opposite directions in both the Hiring and Firing Scenarios. In particular, an upward shift of the wage setting curve leads to a rise in the real wage and a fall in employment, whereas a downward shift of this curve has the opposite effects in both scenarios.

On the other hand, policies whose effectiveness does not depend on insider power - those which shift the labor demand curve but leave the wage setting curve unchanged - have an ambiguous effect on the real wage, since the slope of the wage setting function is ambiguous. This ambiguity is of no particular concern to us here, since only the policies which operate through Insider-outsider channels are the focus of attention in this paper. To fix ideas in the policy analysis below, we will assume that the wage setting function is upward-sloping (so that an upward shift of the labor demand curve leads to a rise in
Employment-Promoting Policies

In the context of the model above, we will examine the effects of three employment-promoting policies: government investment in industrial infrastructure, reductions in payroll taxes (falling proportionately on all employees), and measures to open the economy to foreign competition.

Government infrastructure investment gives rise to an increased availability of particular government goods and services to the private production sector, such as roads, railways, harbors, sewage systems, and police services. Let us assume that, in response, the marginal product of all workers rises proportionately. We portray this by a rise in the shift parameter $B$ of the firms' production functions (in equation (4)).

As result both the aggregate wage setting curve and the aggregate labor demand curve shift upwards. Consequently the real wage rises, whereas the change in employment is ambiguous.

Observe that government infrastructure investment has a more powerful impact on real wages and a weaker impact on employment in our insider-outsider context than under the analogous market-clearing conditions. The reason is that this policy boosts insiders' wage demands in our context, whereas it leaves the labor supply curve unchanged in the market-clearing model.

A fall in the payroll tax rate may be portrayed by a fall in the parameter $r$. As result, the aggregate labor demand relation shifts upwards in all three scenarios, since the policy reduces the marginal cost of labor. The wage setting function shifts upwards as well in

---

21 Observe that, even in the absence of the assumption that the wage setting curve is upward-sloping, the employment effects of these policies is unambiguous, since the slope of the wage setting curve is of greater magnitude than that of the labor demand curve. (Thus an upward shift of the labor demand curve invariably leads to a rise in employment, and obversely for a downward shift.

22 In all our policy exercises we assume that the ratio of consumer to producer prices remains unchanged, and thus - in the absence of a change in the payroll tax - the consumption wage and the production wage in our model always move in the same direction.

23 Clearly, under the Retention Scenario there is only a fall in the real wage.
these scenarios, since the policy raises the firm's profit surplus. By implication, a fall in the payroll tax rate raises the real wage, but the change in aggregate employment is ambiguous.

Thus we can see that a fall in the payroll tax rate provides a stronger stimulus to the real wage and a weaker stimulus to employment under the insider-outsider conditions above than under market-clearing conditions. When the labor market clears, the aggregate labor demand relations shifts upwards along an unchanged labor supply curve, and thus the employment level and the real wage both rise. By contrast, under insider-outsider conditions we have seen that the wage setting function shifts upwards as well as the aggregate labor demand relation, and the rise in the wage setting function boosts the wage and dampens employment.

Measures to open the economy to foreign competition - such as reductions in tariffs and in administrative restrictions on import flows - generally may be expected to raise the price elasticity of product demand. Thus, we depict this policy by a rise in $\eta$. As result, the index of monopoly power in the product market ($e$, defined in equation (8)) falls.

This decrease in firms' market power leaves the wage setting function unchanged in all three scenarios. However, the policy does shift the aggregate labor demand function upwards (in Figures 2), since the fall in monopoly power stimulates employment by raising the marginal value product of labor (as shown in equation (7)). Consequently, there is a rise in employment and the real wage. Thus policy measures to open the economy to foreign competition have the same qualitative effects in our insider-outsider framework as in the corresponding market-clearing framework.

II. Power-Reducing Policies

There is a wide variety of policies which serve to reduce the market power of insiders, ranging from legal restrictions on strikes and picketing to relaxing job-security legislation (e.g. laws to reduce severance pay or to simplify firing procedures). In the context of our model, these policies may be portrayed in terms of (i) a fall in the "a", measuring the relative bargaining strength of the insiders, and (ii) a fall in the real firing cost per insider, $f$. 21
A fall in \( a \) means that insiders are able to capture a smaller share of the total available economic rent from employment. Thus the wage setting function shifts downwards (\textit{ceteris paribus}) in all three scenarios. The aggregate labor demand relation remains unaffected. Consequently, there is a rise in aggregate employment and a fall in the real wage under the Hiring and Firing Scenarios.

A fall in the real firing cost \( f \) leads to a downward shift of the segment of the aggregate labor demand relation which pertains to the Firing Scenario (\textit{ceteris paribus}). The reason is that, in this scenario, the real wage is equal to the sum of the real marginal value product of the initial insider workforce and the real firing cost per insider, \( f \). In addition, the wage setting function in the Firing Scenario shifts downwards (for, the smaller the real firing cost, the greater the firm's profit surplus). By implication, the real wage falls in this scenario, but the change in employment is ambiguous. By contrast, the policy has no effect on the real wage and the level of employment in the Hiring and Retention Scenarios.

It is important to note, however, that the power-reducing policies are not Pareto-improving: they generally lead to the employment of outsiders at the expense of reducing the insiders' labor income. Consequently, the implementation of these policies is likely to encounter all the various difficulties, political and social, that are commonly associated with the loss of market power by privileged interest groups and with conflicts over the distribution of income.

This could be a serious obstacle to implementing these policies. Since the insiders stand to lose, they may be expected to resist these policies by engaging in more rent-creating activities - ranging from harassment of workers who seek to gain jobs through underbidding, to the withdrawal of cooperation from such workers in the process to production, to staging strikes and work-to-rule actions, to litigation.

\[ ^{24}\text{Clearly, under the Retention Scenario there is only a fall in the real wage.} \]

\[ ^{25}\text{This last result is an artifact of the static setting of our model. Whenever firms face the possibility that currently hired employees may have to be fired in the future (say, on account of adverse swings in product demand), a fall in firing costs tends to have the same effect on wages and employment as it does in the Firing Scenario. (See, for example, Lindbeck and Snower (1989b).)} \]
over firing procedures. In particular, power-reducing policies may give the insiders incentives to engage in rent-seeking activities by making these activities more effective by generating an income effect. If insiders expand these activities, they may thereby raise their bargaining strength (a) or the real firing cost (f), so as to shift the wage setting function upwards.

In short, although policies that reduce the legal protection associated with insiders' jobs may have direct effects that stimulate employment, they may also have indirect effects on rent-creating activities that pull in the opposite direction. This deficiency is not restricted just to power-reducing policies. It is shared by any policy that reduces the insiders' labor income. For example, we have argued that the employment-promoting policy of opening the economy to foreign competition may also reduce the wages received by the insiders and thus are equally prone to stimulate insiders' rent-creating activities.

III. Enfranchising Policies

The primary purpose of the enfranchising policies is to give the outsiders a better chance of gaining employment and thereby become "enfranchized" in the wage negotiation process. These policies come in many guises. We consider a few prominent examples.

The labor market effects of vocational training programs - provided or subsidized by the government - may be usefully compared with those of government infrastructure investment (discussed above). Whereas the infrastructure investment may be expected to raise both the productivity of the current employees and the potential productivity of the outsiders, the vocational training programs are aimed expressly at the latter. Obviously, the impact of such programs depends on the degree to which workers' skills are general rather than firm-specific. The greater the relative importance of general skills, the more outsiders can expect to be enfranchised through the programs.

A formal analysis of these programs requires us to consider a broader class of production functions than that contained in our simple model above - in particular, functions in which the productivities of insiders and entrants can vary independently of one another. For production functions in which output depends on the sum
of insiders' and entrants labor in efficiency units, it is straightforward to show - although, for brevity, we do not do so here - that vocational training programs which raise the entrants' marginal product have the same qualitative effects on the real wage and employment as government infrastructure investment that raises the marginal product of labor.

Profit-sharing schemes, whereby employees receive part of their remuneration as a share of profits, are also straightforward to analyze in the context of the model above. In particular, let us assume that each employee's pay is the sum of (i) a time-rate "base" wage and (ii) a "profit-sharing component" which is the product of the firm's profit and a constant profit-sharing coefficient. Furthermore we assume that the profit-sharing coefficient is predetermined in the wage-employment determination process and may be influenced, directly or indirectly, by the government, while the base wage is the outcome of negotiations between each firm and its insiders (along the lines outlined above). Then it can be shown (although, once again, we do not do so here) that the greater the profit-sharing coefficient, the lower the negotiated base wage and the greater the level of employment.

In other words, the greater the profit-sharing component of the employees' pay, the lower the marginal cost of labor (given by the base wage), and the greater the number of outsiders that firms are induced to hire. Once these outsiders become insiders, they gain power in future wage negotiations and use this power to retain their jobs by agreeing to comparatively low base wages. In this sense, our analysis supports Weltzman's contention that profit-sharing schemes promote employment and reduce unemployment (e.g. Weltzman (1987)).

These schemes may, however, encounter the same problems as the power-reducing policies: unless the profit-sharing component of labor remuneration is sufficiently large, the schemes will not be Pareto-improving and consequently they may promote rent-creating activity by the insiders. Yet that is not all. If the profit-sharing component is large enough to avoid this outcome, the scheme may cease to be profitable to the firms. Of course, firms may attempt to avoid this possibility through wage contracts which give the new entrants a permanently lower profit-sharing component than the current insiders. However, such two-tier wage systems may be unacceptable to the current insiders since they tend to be time-inconsistent: the firms
will generally have an incentive to replace the senior workers by junior workers once the latter have acquired the requisite skills.

Furthermore, profit-sharing schemes are costly to implement. They may give workers the incentive to bear the costs of monitoring managers' profit accounting practices. Managers, for their part, may well wish to avoid a remuneration system that subjects them such monitoring. In addition, the profit-sharing schemes impose risk on employees, since the receipt of profit is uncertain and insurance against profit fluctuations is unavailable. To compensate workers for the cost of such risk, firms may have to hand over a substantial share of their profit. All these problems, however, should not obscure the genuine possibility that the above-mentioned benefits of these schemes may in fact outweigh all the relevant costs.

Government policies to reduce barriers to the entry of new firms may be an effective way to enfranchise outsiders, because new firms generally start out without insiders and therefore may be in a good position to create new jobs. These policies may consist of the dismantling of government regulations concerning the creation of new firms, increasing competition among financial institutions with a view to reducing credit restrictions on new firms, changing the tax system (e.g. profit, income, capital gain, and wealth taxes) to put new firms at less of a disadvantage vis-a-vis established firms, and instituting measures to reduce the occupational, industrial, and geographic coverage of union wage agreements.

These policies have two reinforcing effects on employment in the context of our model:

(a) the direct effect of a rise in the number of firms in the economy is to shift the aggregate labor demand relation rightwards, thereby generating more employment at any real wage and

(b) an indirect effect may reduce firms' market power in the product market (represented by the coefficient \( e \)), thereby shifting the aggregate labor demand curve even further to the right under the Hiring and Firing Scenarios and shifting the wage-setting function downwards.

Finally, job sharing schemes deserve mention as an enfranchising policy. The aim of these schemes is to give insider status to a larger number of workers. These workers may then be expected to negotiate their future wages with a view to protecting their job security. In other words, the workers who gain employment through
these schemes may have an incentive to keep wages sufficiently low to maintaining that employment. Thus, whereas the initial institution of job sharing may require legislative coercion, this arrangement may be perpetuated by decentralized wage bargaining. For brevity, we will not analyze these schemes formally here. Suffice it to say that job sharing schemes have a chance of being effective only if they do not substantially increase firms' hourly labor costs and only if they do not induce incumbents to engage in significant rent-creating activity.

In sum, supply-side policies may stimulate employment by making all workers more productive, by reducing the market power of insiders, and by enfranchising the outsiders. However, some of these policies reduce the labor income of the current insiders and may therefore induce insider resistance in the form of rent-creating activities, which limit the overall employment gains. This specific problem is generally not shared by demand-side policies which improve the employment prospects of the outsiders without making the current insiders worse off. However, the demand-side policies - as noted below - are associated with other difficulties.

6. Demand-Side Policies

Demand management policies which are designed to influence employment may be divided into two broad groups: (i) variations in government employment and (ii) government policies that affect aggregate spending in the product market.

The first type of policy is of substantial practical importance, but it does not need much attention here, since its effects are quite straightforward in the context of our model. A rise in government employment shifts the aggregate labor demand relation outwards, and thereby leads to a rise in employment and the real wage. Note that this policy does not affect the position of the wage setting curve and thus the impact on the real wage and employment are the same under market-clearing and insider-outsider conditions.

The second type of policy is concerned exclusively with the transmission of policy impulses from the product to the labor market. In the Keynesian literature, this transmission depends on the assumption of either sluggish nominal wages, or sluggish prices, or both. If nominal wages respond sluggishly to expansionary fiscal...
policy in the product market, then the resulting rise in the price level will reduce the real wage, moving the economy downward along the aggregate labor demand relation and thereby raising employment. If prices respond sluggishly and firms are rationed in the product market, then a rise in product demand generates an "intermarket spillover" which shifts the aggregate labor demand relation outwards.

These traditional Keynesian models assume that firms and workers are wage and price takers, but it is well known that this behavior is generally not in the best interests of these agents when markets do not clear. Of course it is possible to rationalize wage-price sluggishness by appealing to various specific circumstances, such as government price fixing, long-term wage contracts, or wage- and price-setting under adverse selection or moral hazard. We do not dispute that the Keynesian channels of policy transmission from the product to the labor market may operate under these circumstances, but the general applicability of these channels and their practical significance remains open to question. It is therefore worth asking if there are transmission mechanisms whereby variations in aggregate product demand affect employment even when wages and prices are set flexibly under conditions of imperfect competition.

The model above is designed to handle this question, since it contains imperfectly competitive price and wage setters and since prices and wages are assumed to respond immediately to government policies. The demand management policies in the product market may be represented quite generally by the parameter $A$ in the aggregate product demand function (1). The parameter may, for example, stand for government expenditures, transfers, or taxes.\(^{26}\)

Observe that this parameter appears neither in the aggregate labor demand relation (given by (10a)-(10c)) nor in the wage setting function (18). Thus, we may conclude that a demand-side policy whose only impact effect is to change the demand parameter $A$ - without simultaneously affecting the price elasticity of product demand, the number of firms in the economy, or the marginal product of labor - has no effect on employment and the real wage in the context of our model.

---

\(^{26}\)To fix ideas, we suppose that changes in government spending, transfers, or tax receipts are financed through countervailing changes in the money supply.
This negative conclusion also have a positive side, namely, that demand management policies in the product market can influence the labor market in the following ways, some of which may be quite important empirically:

(I) The price elasticity of aggregate product demand, \( \eta \): If expansionary demand management raises this elasticity, then the aggregate labor demand relation shifts upwards (by equations (20a-c)), since a rise in the elasticity reduces firms' monopoly power in the product market (e). The wage setting function remains unchanged. Thus this policy has the same impact under market-clearing and insider-outsider conditions (namely, that the real wage rises in all three scenarios and employment rises in both the Hiring and Firing Scenarios but not in the Retention Scenario).

Various reasons have been proposed for the procyclical movement of the price elasticity of aggregate product demand. For example, Stiglitz (1984) argues that this phenomenon will occur if the real interest rate moves countercyclically and customer search for heterogeneous products is costly. Rotemberg and Saloner (1986) construct a model in which oligopolists have an incentive to behave more competitively as product demand rises. Bills (1987) argues that the mark-up of prices of durable goods over wages may be procyclical since poor customers tend to buy these goods primarily in boom periods. Lindbeck and Snower (1987b) show that if the price elasticity of demand by the public sector exceeds that by the private sector then an increase in government product demand could raise the elasticity of aggregate product demand.

It is worth noting, however, that all of these rationales apply only to special circumstances which, we believe, do not occur widely and frequently enough to provide a reliable and systematic channel for the transmission of product market policy to the labor market. Thus, this transmission mechanism appears to be a "week reed" on which to hang a theory of demand management.

(ii) Entry of firms: If a rise in government product demand creates incentives for the entry of new firms, then the aggregate labor demand relation shifts upwards (as we have discussed in connection with government policies to reduce barriers to the entry of new firms). If
new, entering firms compete with the old ones in the product market, each firm's monopoly power in that market may fall, thereby leading to a further rightward shift of the labor demand relation. Moreover, a rise in the number of firms leads to an upward shift of the wage setting function. Consequently, the real wage rises by more than it does under market-clearing conditions, whereas employment rises by less - and possibly even falls.

To see how a rise in product demand could lead to the entry of new firms, suppose that the nominal wage does not respond promptly to the policy whereas prices do (or, more generally, that nominal wages are more sluggish than prices). Then the policy leads to a rise in the product price and a fall in the real wage, and thereby raises the profit to be earned by each firm. This encourages the entry of new firms. Then, even if the real wage returns to its initial level, the aggregate demand for labor remains above its initial level (because the number of firms, \( M \), has increased and their market power, \( e \), has fallen). For this reason the aggregate labor demand relation shifts to the right. As noted above, however, the resulting stimulus to employment is at least partially offset by the upward shift of the wage setting curve.

(111) The marginal product of labor, \( B \): As we have seen, a rise in the shift parameter, \( B \), of the production function shifts both the wage setting curve and the aggregate labor demand curve upwards (by equations (20a-c)). Consequently a demand-management policy operating through this channel of transmission has a stronger effect on the real wage and a weaker effect on employment under Insider-outsider conditions than under market-clearing conditions.

There are two main ways in which expansionary demand management policy could raise the marginal product of labor: First (as noted in Section 5), it could do so directly, through government

---

27 For any given level of aggregate employment, a rise in the number of firms is associated with a fall in employment (\( n \)) by the representative firm. By the microeconomic wage setting functions (18a) and (18b) a fall in the firm's employment level is associated with a rise in the real wage.

28 For a detailed analysis of this transmission mechanism, see Lindbeck and Snower (1987b).
spending that increases the economy's industrial infrastructure. Second, the policy could have an indirect effect on the marginal product of labor by stimulating the use of factors which are complementary to labor (or discouraging the use of factors which are substitutes for labor).

The latter channel may have a particularly important practical role to play when the policy raises firms' rates of capital utilization under conditions of excess capital capacity. This is likely to happen when the economy is recovering from a recession and workers are recalled to man vacant machines and bring established assembly lines back into operation. The capital equipment that comes into use under these circumstances is generally complementary to labor. Once the capital utilization rate is sufficiently high, firms may have an incentive to engage in net investment. The resulting rise in the capital stock may further raise the marginal product of labor. (A formal analysis of this policy effect is given in Lindbeck and Snower (1987b) and lies beyond the scope of our model.)

In sum, we have examined how demand-side policies in the product market can influence labor market activity under flexible wages and prices as well as imperfect competition. Our analysis suggest three potentially important channels of transmission, each of which has noteworthy policy implications and has a weaker impact on employment under insider-outsider conditions than under market-clearing conditions:

- There is a short-run channel, whereby changes in product demand affect the level of capital utilization which, in turn, affects the marginal product of labor. This channel is open whenever excess capital capacity exists; it does not depend on the level of unemployment. By implication, an increase in government product demand may lead to an increase in employment at constant or rising real wages when there is excess capital capacity, but not once full capacity utilization has been reached.

- In the medium run, there is a channel involving the entry (and exit) of firms. In order for this channel to be operative, it is important that the demand-side policy be supported by the relevant supply-side policy, viz, the removal of barriers to the entry of firms. There is also a medium-run channel whereby a rise in product demand stimulates net investment, and this channel is operative only when the rate of
capital utilization is sufficiently high.
- The long run channel involves the buildup or rundown of industrial infrastructure. Here, the policy operates simultaneously on the demand side (via changes in government spending) and the supply side (via changes in the economy's production possibility frontier). Our analysis implies that demand-side policies with such supply-side effects may have a much larger impact on employment than policies (such as changes in transfer payments or government consumption) which do not affect labor productivity.

7. Concluding Remarks

Our analysis suggests a variety of policies which can stimulate employment when unemployment is generated through insider-outsider conflict of interest. It also provides guidelines for identifying policies which are likely to be ineffective. We have shown how supply-side policies can increase employment by raising worker productivity or reducing labor costs. Regarding demand management policies, we have reached conclusions that go well beyond the standard Keynesian analysis. In particular, our analysis indicates that when wages and prices are perfectly flexible and insiders wield power in the labor market, then demand-side policies in the product market are unlikely to have a pronounced effect on employment unless these policies stimulate labor productivity, the entry of firms, capital utilization, or investment. Furthermore, we have shown that supply-side policies (such as the reduction of barriers to entry of new firms) may enhance the effectiveness of demand management policies regarding employment. In this sense, the demand- and supply-side policies can be complementary.

Observe, however, that our results have been derived within a static context. Although a dynamic analysis lies beyond the scope of this paper, it is worth noting that the dynamic effects of the policies above may be just as important as the static ones. The main source of dynamics implicit in our model is that the initial insider workforce depends on past employment: the greater the number of entrants hired in the past, the greater the number of insiders firms inherit at present. This means that a supply- or demand-side policy which leads to a rise in current employment will raise the future
Insider workforce. Thus the aggregate labor demand relation shifts rightwards through time, thereby generating a rise in future employment and wages.

Elsewhere, it has been shown that these persistent effects of policies may be "symmetric" and/or "asymmetric". Under symmetric persistence, the future employment rise from a current expansionary policy is just as large as the future employment fall from a contractionary policy of equal magnitude; whereas under asymmetric persistence, contractionary policies have a stronger effect on future employment than expansionary policies do. (See, for example, Lindbeck and Snower (1987a, 1989a).) In countries with high unemployment and significant symmetric persistence, a particularly strong case could be made for expansionary demand-side policies and employment-promoting supply-side policies, since current policy shocks - even if they are transient - will raise employment in the future. Yet in countries with significant asymmetric persistence, such policies may not be very effective: whereas contractionary policies may reduce employment, the expansionary ones may do little to stimulate it. Under these circumstances, the power-reducing and enfranchising supply-side policies may be called for, in order to create greater equality of opportunity in the labor market and thereby make the other policies above effective. The study of these policy issues appears to be a promising area for future research.
Acknowledgement

We wish to express our gratitude for insightful comments by Olivier Blanchard, Michael Hoel, and Edmund Phelps.

References


